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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/469,406	12/22/1999	ALI KESHAVARZI	042390.P7511	4937

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ALOYSIUS T C AUYEUNG  
BLAKLEY SOKOLOFF TAYLOR & ZAFMAN LLP  
12400 WILSHIRE BOULEVARD 7TH FLOOR  
LOS ANGELES, CA 90005

EXAMINER

KANG, DONGHEE

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Art

<b>Office Action Summary</b>	<b>Applicati n No.</b>		<b>Applicant(s)</b>	
	09/469,406		KESHAVARZI ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Donghee Kang		2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-31, 35-36, 38-42, 46-47 and 49-50 is/are rejected.
- 7) ☒ Claim(s) 32-34, 37, 43-45 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **29-31, 35-36, 38-42, 46-47 & 49-50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Manning et al. (US 5,962,887).

Re Claims **29-31, 36 & 38**, Manning et al. teach a die comprising (Fig.3):

a first conductor carrying a power supply voltage; a second conductor carrying a ground voltage; and a semiconductor capacitor to provide capacitance between the first and second conductors (Col.2, lines 28-32), the semiconductor capacitor including:

a gate electrode (180) coupled to the first conductor to receive the power supply voltage, a body, n-type, (200) to receive the ground voltage and source/drain diffusions that p+ type (210 & 220).

Manning et al. do not expressly teach a diffusion region formed in the body. However, APA (Fig.1) teaches the diffusion region (n+) formed in the body (N-well) to provide a better interconnection and p-type gate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the diffusion region in Manning's device since it provides a better electrical contact to receive a ground voltage. Manning et al. teach semiconductor capacitor can be operated in depletion mode by the voltage applied to the capacitor (Col.2, lines 1-5).

Regarding claims **35 & 39**, Manning et al. as modified by APA does not teach the power supply voltage has a smaller absolute value than does the flatband voltage. However, it is conventional to have the power voltage which has a smaller absolute value than does the flatband voltage to obtain depletion mode (see also Fig.3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply power voltage having smaller absolute value than does the flatband voltage since it is requested to have small power voltage than flatband voltage to obtain depletion mode.

Re Claims **40-42, 47 & 49**, Manning et al. teach a die comprising (Fig.1):

a first conductor carrying a power supply voltage; a second conductor carrying a ground voltage; and a semiconductor capacitor to provide capacitance between the first and second conductors (Col.2, lines 28-32), the semiconductor capacitor including:

a gate electrode (100) coupled to the first conductor to receive the power supply voltage, a p-type body (120) to receive the ground voltage and source/drain diffusions that N+ type (130 & 140).

Manning et al. do not expressly teach a diffusion region formed in the body. However, APA (Fig.9) teaches the diffusion region (p+) formed in the body (P-type) to provide a better interconnection and n-type gate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the diffusion region in Manning's device since it provides a better electrical contact to receive a

ground voltage. Manning et al. teach semiconductor capacitor can be operated in depletion mode by the voltage applied to the capacitor (Col.2, lines 1-5).

Regarding claims **46 & 50**, Manning as modified by APA (Fig.9) does not teach that the semiconductor decoupling capacitor has a flatband voltage and wherein the power supply voltage has a smaller absolute value than does the flatband voltage. However, it is conventional to have the power voltage which has a smaller absolute value than does the flatband voltage to obtain depletion mode (see also APA Fig.3). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply power voltage having smaller absolute value than does the flatband voltage since it is requested to have smaller power voltage than flatband voltage to obtain depletion mode.

***Allowable Subject Matter***

3. Claims 32-34, 37, 43-45 & 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Prior art reference, taken along or in combination, do not teach or render obvious that a gate coupled to the conductor to receive the power supply voltage, a diffusion coupled to the conductor to receive the ground voltage and source/drain diffusions are coupled to the conductor to receive the ground voltage.

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Prior art reference, taken along or in combination, do not teach or render obvious that a gate coupled to the conductor to receive the ground voltage, a diffusion coupled to the conductor to receive the power supply voltage and source/drain diffusions are coupled to the conductor to receive the power supply voltage.

**Conclusion**

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghee Kang whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*Donghee Kang*

Donghee Kang  
Examiner  
Art Unit 2811

dhk  
August 7, 2003